

## ABSTRACT

Methods and apparatus for trapping or guiding ions. Ions are introduced into an ion trap or ion guide. The ion trap or ion guide includes a first set of electrodes and a second set of electrodes. The first set of electrodes defines a first portion of an ion channel to trap or guide the introduced ions. Periodic voltages are applied to electrodes in the first set of electrodes to generate a first oscillating electric potential that radially confines the ions in the ion channel, and periodic voltages are applied to electrodes in the second set of electrodes to generate a second oscillating electric potential that axially confines the ions in the ion channel.

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